

## **Remarks**

### **Rejections Under 35 U.S.C. Section 103**

The claims have been rejected under 35 U.S.C. Section 103(a) as being unpatentable over Corvasce et al. (U.S. Patent No. 5,672,639; hereinafter “Corvasce”) in view of Huynh-Tran et al. (US2003/0152758, hereinafter “Huynh-Tran”).

It is stated in the office action that in order to show the criticality of the claimed adduct of maleic anhydride and polybutadiene, (“maleinized polybutadiene”) a comparative sample comprising an “un-modified polybutadiene” should be provided. Applicants herewith submit a declaration under 37 C.F.R. 1.132 (Frank Declaration) signed by Dr. Uwe Ernst Frank, a co-inventor of the present invention. The Frank Declaration includes a comparative example illustrating the effect of an adduct of maleic anhydride and polybutadiene compared to an un-maleinized polybutadiene, and demonstrates the criticality of the claimed adduct of maleic anhydride. Applicants urge that this showing, in combination with that in the previous response mailed February 12, 2008, is sufficient to overcome *prima facie* obviousness of the claims.

As noted in paragraph 1 of the Frank Declaration, Applicants urge that Dr. Frank is clearly qualified as one skilled in the art. As such, Dr. Frank is qualified to offer the data and reliable opinion on the significance of the data.

As noted in paragraph 2 of the Frank Declaration, Dr. Frank has read the reference Corvasce in preparation for interpreting the data.

As noted in paragraphs 3 and 4 of the Frank Declaration, Dr. Frank directed preparation and testing of a series of rubber compounds to demonstrate the criticality of the claimed adduct of maleic anhydride.

As noted in paragraph 5 of the Frank Declaration, Dr. Frank discusses the criticality of the

claimed adduct of maleic anhydride. As noted in paragraph 5, the comparison of the loss moduli at -10°C for samples containing maleic anhydride/polybutadiene adduct with samples containing unmodified polybutadiene from Figure A indicates a surprising effect in view of the prior art. The loss modulus  $G''$  at -10°C for the un-modified polybutadiene compositions (Samples E, F, and G) was approximately constant over the strain range. By contrast, the loss modulus at -10°C for maleic anhydride/polybutadiene adduct compositions (Samples B, C, and D) was nonlinear over the strain range, consistent with the data of Table 7, Example II of the specification. This behavior is consistent with the specification suggestion (page 24, lines 14 through 23) that in the presence of the maleic anhydride/polybutadiene adduct, a core-shell interphase between the polymer matrix and the starch/plasticizer composite filler exists and remains soft at low temperature, and as a consequence can induce higher loss properties than is possible without the maleic anhydride/polybutadiene adduct. The lower stiffness at large strain may be attributed to the softer core shell with the adduct of maleic anhydride and polybutadiene, as compared to the un-modified polybutadiene. As noted by Dr. Frank, this finding is particularly surprising and unexpected in view of the teaching of Corvasce (U.S. Patent No. 5,672,639), which only teaches the use of the un-modified polybutadiene and does not teach such an effect for maleic anhydride/polybutadiene adduct.

Applicants urge that the claims are now fully commensurate in scope with the showing of unexpected results in the specification, and as such the showing of unexpected results is sufficient to overcome *prima facie* obviousness of the claims.

### **Conclusion**

Applicants urge that the amended claims are now fully patentable over the cited art.

Applicants respectfully request allowance of all claims.

Respectfully submitted,

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